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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,767	02/24/2006	Ryuusuke Suzuki	24530-012	6069
32137 7590 03/05/2009 PATENT DOCKET CLERK COWAN, LIEBOWITZ & LATMAN, P.C. 1133 AVENUE OF THE AMERICAS NEW YORK, NY 10036				
EXAMINER CULBERT, ROBERTS P				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
03/05/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/569,767

Applicant(s)

SUZUKI, RYUUSUKE

Examiner

Roberts Culbert

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-US)
Paper No(s)/Mail Date 8/15/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,054,338 to Lee et al.

Regarding claim 1, Lee et al. teaches a method comprising forming division grooves on the substrate surface (see figures 3-5); forming a circuit element on the ceramic substrate; fixing conductive balls to terminal portions of the circuit element; (Fig 12, 13) and applying stress to the substrate to open the grooves to divide the substrate. (Col. 3, Lines 40-46) Lee et al. does not expressly teach if the stress is applied to the conductive balls or the substrate, however since the outer surface comprises the substrate and conductive balls and Lee et al. teaches breaking which provides a force or stress, the stress is necessarily applied to the conductive balls and/or the substrate as claimed, in order to break the substrate by application of force.

Regarding claims 4 and 11, Lee et al. teaches the division grooves and conductive balls exist on the same substrate surface as recited. (Figure 5)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,054,338 to Lee et al. in view of JP 2001053033 to Masumoto et al.

Regarding Claim 7, Lee et al. teaches a method comprising forming a circuit element on a ceramic substrate; fixing conductive balls to terminal portions of the circuit element; forming division grooves on the substrate surface and applying stress to the substrate to open the grooves to divide the substrate. Lee et al. does not expressly teach if the stress is applied to the conductive balls or the substrate, however since the outer surface comprises the substrate and conductive balls and Lee et al. teaches breaking, the stress is applied to the conductive balls and/or the substrate as claimed, in order to break the substrate by application of force.

Further regarding Claim 7, Lee et al. does not expressly teach forming the grooves after the step of fixing conductive balls to the terminal portions of the circuit.

However, Masumoto et al. teaches forming dicing grooves in the substrate after formation of the conductive balls such that the grooves are aligned with the devices. (See Figure 7)

It would have been obvious to one of ordinary skill in the art at the time of invention to provide forming the grooves after the step of fixing conductive balls to the terminal portions of the circuit since this allows visual or other alignment of the grooves to pre-formed circuit devices as shown by Masumoto et al.

Regarding claim 9, Lee et al. teaches the division grooves and conductive balls exist on the same substrate surface as recited.

Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,054,338 to Lee et al. in view of JP 10050886 A to Robaato.

Regarding Claims 6 and 10, Robaato teaches fixing the conductive balls to the substrate using a conductive bonding agent is well known in the art of attaching the conductive bumps.

It would have been obvious to one of ordinary skill in the art at the time of invention to provide the conductive bonding agent since cleaning is not required prior to bonding and residue is not left as recited by Robaato. (See Abstract)

Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,054,338 to Lee et al. in view of JP 2003-17829 to Fujiwara et al.

Regarding Claims 3 and 8, Fujiwara et al. teaches a buffer member (7) which becomes a convex portion relative to a concave portion (*conductor bumps (10)*) is located on the substrate to absorb stress and thus prevent deformation of the conductor bumps.

It would have been obvious to one of ordinary skill in the art at the time of invention to provide a buffer member which becomes a convex portion relative to a concave portion is located on the substrate in order to absorb stress as recited by Fujiwara et al. and prevent conductor bump deformation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.